What Is Claimed Is:

1. A method for developing dimensional information about an object on a specular background utilizing a scanning system having a sensor, the scanning system scanning an illumination beam of electromagnetic energy, the method comprising the steps of:

determining reference data based on an illumination beam reflected from the specular background;

positioning the sensor based on the reference data so that a waist of the illumination beam substantially coincides with an expected predetermined 3D location of the object so as to enhance contrast and obtain three-dimensional sensor data and/or confocal sensor data; and

processing the sensor data to obtain the dimensional information.

2. The method as claimed in claim 1 wherein the object is a bump and wherein the dimensional information includes a height estimate of the bump.

3. The method as claimed in claim 2 wherein the dimensional information includes information as to whether the bump is defective or not.

4. The method as claimed in claim 1 wherein the object has a spherical, mirror-like surface and wherein the object is mounted on a planar mirror-like surface of the background.

5. The method as claimed in claim 4 wherein the dimensional information includes a diameter for the spherical mirror-like surface.

6. The method as claimed in claim 1 wherein the dimensional information includes 3D information.

7. The method as claimed in claim 1 wherein the object is a micromechanical device.

8. The method as claimed in claim 1 wherein the object is a conductive trace.

9. The method as claimed in claim 1 wherein the object is an interconnect on a semiconductor device.

10. The method as claimed in claim 1 wherein the three-dimensional sensor data and the confocal sensor data are processed sequentially or in parallel with a predetermined measurement algorithm.

11. The method as claimed in claim 1 wherein the three-dimensional sensor data and the confocal sensor data have substantially perfect temporal and spatial registration before the step of processing.

12. The method of claim 1 wherein the object has a diameter and wherein the dimensional information is a measurement of the diameter.

13. The method of claim 1 wherein the object is a defect of or on a wafer.

14. The method as claimed in claim 1 wherein the dimensional information includes height information.

15. The method as claimed in claim 1 wherein the step of processing the sensor data is performed in combination to produce the dimensional information.

16. The method as claimed in claim 1 wherein the object has a diameter and wherein the dimensional information includes diameter information and wherein the method further comprises the step of locating a region of the object for further data acquisition based on the dimensional information.

17. A system for developing dimensional information about an object, the system comprising:

at least one illuminator for illuminating an object with at least one beam of electromagnetic energy to obtain at least one reflected beam of electromagnetic energy;

a confocal detector for detecting the at least one reflected beam of electromagnetic energy and producing at least one signal;

a signal processor for processing the at least one signal to obtain confocal data; and

a data processor having digital data processing data smoothing and curve fitting algorithms for processing the confocal data with a priori knowledge about the object to obtain the dimensional information whereby the accuracy of the confocal data is improved.

18. The system as claimed in claim 17 further comprising at least one triangulation-based detector for detecting the at least one beam of electromagnetic energy and producing at least one triangulation-based signal and a triangulation-based signal processor for

processing the at least one triangulation-based signal and producing triangulation-based sensor data.

19. The system as claimed in claim 18 further comprising storage means for storing the triangulation-based sensor data and the confocal data in parallel.

20. The system as claimed in claim 18 further comprising a controller coupled to the data processor for controlling the system based on either the confocal image data or the triangulation-based sensor data.

21. The system as claimed in claim 17 wherein the dimensional information includes height information.

22. The system as claimed in claim 18 wherein the confocal data and the triangulation-based sensor data are processed by the data processor in combination to produce the dimensional information.

23. The system as claimed in claim 17 wherein the dimensional information includes gray scale information.

24. A method for inspecting bumps on a wafer, the method comprising the steps of:

acquiring reference data based on 3D information obtained from either a confocal subsystem or a triangulation subsystem having a triangulation sensor;

generating a scan based upon reference data to obtain 3D data wherein the 3D data is obtained from the triangulation sensor; and

determining height of the bumps based on the 3D data.

25. A method for developing dimensional information about an array of objects, each of the objects having a surface, the method comprising the steps of:

obtaining a first set of data representing maximum specular reflections from the surfaces of the objects;

computing height estimate data for the array of objects utilizing the first set of data; and

analyzing the height estimate data to obtain an estimate of the height.

26. The method as claimed in claim 25 further comprising the step of obtaining additional dimensional information about the array of objects using a confocal sensor based upon the estimate.

27. The method as claimed in claim 25 further comprising the steps of obtaining a second set of data represented by a region in proximity to the maximum specular reflection and analyzing the second set of data by peak location to reduce optical crosstalk.

28. The method of claim 25 wherein each of the objects has a diameter and wherein the dimensional information is a diameter of at least one of the objects.

29. The method of claim 25 wherein each of the surfaces is a shiny curved surface which is a reflowed, substantially spherical, solder ball surface.

30. A method of measuring at least one dimension of an interconnect on a specular wafer, the method comprising the steps of:

measuring the wafer at three or more non-colinear locations to obtain reference data;

forming a reference surface from the reference data;

scanning the wafer to obtain scan data based on the reference surface; and

determining the at least one dimension of the interconnect based on the scan data.

31. The method of claim 30 wherein the scan data is confocal data.

32. The method of claim 30 wherein the scan data is triangulation data.

33. The method of claim 30 wherein the scan data is confocal and triangulation data.

34. The method of claim 30 wherein the interconnect has a curved specular surface.

35. The method of claim 30 wherein the interconnect is a solder ball.